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Number 10

The Newsletter of the Montana Natural Heritage Program

Spring 2007

Focusing on Invertebrates ...

Though small and largely inconspicuous, invertebrates form one of our most important animal groups. They greatly outnumber the larger vertebrate animals – in both abundance and diversity – and they also play vital roles in our natural economy, such as pollination and soil enrichment. However, there is scant scientific information on most invertebrates (other than those considered pests), because they are unobtrusive, can be difficult to identify, and because little funding has been available to study them.

Such limited information can lead to the conclusion that species known from only one or a few locations are exceedingly rare, when in fact they may be much more common -- just not well documented. In addition, some species have been described as new based on just one or two collections; it is not uncommon for species-level status to be revoked with closer study and more collections.

This “invertebrate information gap” could have serious implications. For example, 928 terrestrial mollusks (land snails and slugs) are ranked as globally imperiled or rare by NatureServe (Explorer website, 2007), with 90 of those occurring in Montana or surrounding states (North & South Dakota, Idaho, Wyoming, and Utah). Currently, 54 snails and slugs are listed as Federally Endangered or Threatened by the US Fish & Wildlife Service.

Clearly, better data are needed on the distribution and status of terrestrial mollusks, so that species rarity can be accurately determined. In addition, managers need information that can help them prevent truly rare species from becoming endangered. In Wyoming, where four snail species have been petitioned for listing since 2000 (WYNDD proposal), a coalition of industry partners funded an invertebrate biologist and survey project by that state’s natural heritage program.

NHP zoologists began compiling data on Montana’s mollusks in 2002, and initiated broad-scale surveys in 2005. Supported primarily by funding from the U.S. Forest

Service, these efforts have focused largely on national forest lands. Areas of likely habitat were selected within each national forest and district. These included limestone outcrops, talus, rocky areas along streams, aspen stands, and mature moist forest. Surveys were conducted by searching through litter, woody debris, talus, and bryophyte mats for a specific length of time.

Biologists recorded mollusks detected and habitat data using a standardized survey form. About 10% of the sites were visited by more than one person, to improve the



Humped Coin (*Polygyrella polygyrella*)

odds of detection and also to quantify the likelihood of detection (critical for our data users, who know that “absence of evidence” usually can’t be interpreted as “evidence of absence”). This systematic approach yielded information on basic distribution, habitats and natural history of Montana’s mollusks, as well as some statistics on species’ relative abundance.

So, what did our zoologists find? Surveys of 264 sites yielded over 1,200 mollusk records, including 192 new locations for 13 Montana Species of Concern. **Already, the data have resulted in significant down-ranking of five species that were considered globally at risk.** The Pale Jumping-slug and Fir Pinwheel snail are no longer considered at risk, and global ranks for the Smoky Taildropper, Humped Coin and Pygmy Slug have been downgraded. The Smoky Taildropper, documented only from a single location in Montana prior to 2004, was found at 30 new Montana locations in 2006, underscoring how limited our data for these

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species have been. Four native and three exotic mollusk species were documented in Montana for the first time, and a number of other Montana mollusks were added to the MTNHP database.

Other benefits of this project include development of a monitoring scheme for terrestrial mollusks, and identification of key management issues and opportunities to reduce damage to key habitats. Reports summarizing work done in 2003 and 2005 are available on our website; the report for 2006 is scheduled for completion this spring.

This rich harvest of new data underscores the value of continued surveys. We also look forward to adding information on mollusks to our Animal Field Guide, modeling species distributions, and developing easy-to-use identification aids so that field biologists can begin collecting more data on these little-known creatures. Genetic work will also be needed to determine whether some populations are distinct from similar creatures that occur near the Pacific Coast.

Special thanks to the U.S. Forest Service, Region 1 Office for funding this work, and to Plum Creek Timber Company for contributing valuable Species of Concern records.

References cited:

Beauvais G. P. and G. P. Jones. 2004. Establishing a Program of Invertebrate Zoology at the Wyoming Natural Diversity Database (WYNDD). Unpublished proposal. Laramie, Wyoming. 5pp.

NatureServe. 2006. NatureServe Explorer: An online encyclopedia of life [web application]. Version 6.1. NatureServe, Arlington, Virginia. Available <http://www.natureserve.org/explorer>. (Accessed: April 9, 2007).



Director's Scope: Cracking the Code

Natural Heritage Programs were created to glean information on native species and habitats from myriad sources, and make it easily available to those who need it. In the past, most of the data we assembled was in hard copy format – from field forms, museum collections, publications, and miscellaneous observations. Records were processed one by one, through a careful and fairly time-intensive process.

Over the past decade, however, big changes have occurred in the data world. Huge advances in information technology have enabled agencies, offices and even individual wildlife observers to develop their own databases for recording observations and other field data. The result has been vast amounts of new data, especially on birds and other vertebrates. This offers tremendous opportunities for improving wildlife and habitat management.

But, there's a hitch. Even though modern software makes data transfers relatively easy, each database was designed with its own unique content, format and conventions. Therefore, combining data from different databases poses a real challenge.

Fortunately, this challenge is exactly what the Natural Heritage Program was created for, and what our staff excel at. Last March, with support from our Partners Committee, we formed a Data Coordination Working Group to promote data standardization and exchange. Already, NHP staff have made major strides, thanks to great cooperation from partners. These include:

- Successful import of wildlife observation data from the Lolo National Forest's FAUNA database. Data for other Montana Forests will be exchanged in the future, and NHP data for USFS lands will be

exchanged back into the FAUNA database for USFS use.

- A cooperative agreement for managing Bird Observation Data in Montana (with Montana Audubon, the Montana Bird Records Committee, and MT-FWP);

- Import of over 260,000 bird records from the Avian Science Center's Land Bird Monitoring Program at the University of Montana – there are now more than 429,000 bird observation records in the Montana Bird Distribution Database!

- A proposal to coordinate statewide land cover mapping (developed with broad partner support).

As we continue this work, you will see huge growth of our data resources – which in turn will benefit all of you who use our services. We want to express a big “Thanks” to our partners and data providers for helping us meet the challenges and reap the benefits of this technology revolution.

- Sue Crispin

Giant Salamanders in Montana



Idaho Giant Salamander (*Dicamptodon aterrimus*)

Until Lolo National Forest employee Jennifer Copenhaver confirmed the existence of Idaho Giant salamanders in the West Fork of Big Creek in summer 2005, there had been only one undocumented report of these secretive creatures in Montana. Survey efforts by scientists and fisheries workers had been unsuccessful in finding more even though the creatures are known to exist in nearby Idaho on the west slopes of the Bitterroots. Although they are our largest salamander, reaching 7.5 inches in length, and sport distinctive marbling on their backs, they are nocturnal and notoriously shy.

Certain that the salamanders were “out there,” NHP senior zoologist Bryce Maxell teamed up with UM researchers last summer to launch systematic surveys of Idaho Salamanders. UM student Eric Dallalio led volunteers on the surveys as part of his senior thesis. The work was funded by U.S. Forest Service Region 1 and the Montana Fish, Department of Wildlife and Parks.

The results were remarkable: surveyors documented over 400 giant salamanders in no less than

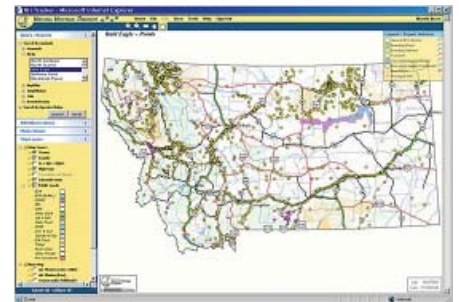
15 streams within the Big, Deer and Mayo creek drainages, on the east slope of the Bitterroot's south of I-90 (near the communities Saltese, Haugan and DeBorgia). Most of the animals were found in small pools at the headwaters of streams, where moss-covered boulders provide plenty of overhangs and spaces in which the adults and larvae can hide. The surrounding forest was often old-growth, but some sites were in secondary forest that had been completely logged in the past, indicating that the animals either survived the cuts or recolonized afterwards. Some were also found in roadside streams where there was appropriate habitat.

Bryce speculates that the species had gone undetected for so long because most headwater streams had never been systematically surveyed. In addition to the giant salamanders, surveyors were rewarded by finding Rocky Mountain tailed frogs in all but a handful of the streams surveyed. They also documented several rare land snails and added valuable information on the distribution of fishes in headwater streams.

Introducing...

NATURAL HERITAGE TRACKER

Our former Information Portal website now sports a new name, vast amounts of new data, and greatly expanded tools. The Natural Heritage Tracker is a state-of-the-art, map-based interface that provides fast desktop access to over 429,000 bird observation records, as well as nearly 100,000 observations of other vertebrate and invertebrate animal species.. A variety of base maps can be selected, including topographic quads and the latest statewide color air-photos.



Users can also use the Natural Heritage Tracker to record their own observations of bird and other wildlife species. Specific locations can now be readily accessed through geographic search options, including a place name locator. Another new function, the “photo viewer” tool, provides geo-referenced access to over 8,000 photos of water bodies surveyed for the presence of amphibians.

Over the coming months, we will expand queries to include species' status designations and add other data types, including Element Occurrences (for animals and plants), animal ranges and predicted habitats, and aquatic community data.

Botany News

Better Data for Southeast Montana

Thanks to a two-year project supported by the BLM, we now have much better information on Plant Species of Concern in southeast and south central Montana. This project focused on BLM lands in 8 counties -- an area with 2.1 million acres of BLM-managed public lands. These lands contain important habitat for nearly 40 Plant Species of Concern (SOC) -- including the only known Montana locations for several plants.

Field surveys conducted over two field seasons revisited known sites to collect data on population status and habitats, and also surveyed potential habitats for new populations. **This produced valuable new information, including documentation of a plant new to Montana -- Wyoming thistle (*Cirsium pulcherrimum*),** which was conclusively documented in the state from breaklands near the Powder River. Although this species had been reported in the state, no conclusive documentation or voucher specimens for these reports could be located.

In addition to field survey, the project also included a major "shakedown" of our plant databases for this area, including thorough review and remapping of all the plant occurrence records. Thanks to our last major database upgrade, we can now map the actual boundaries of a population, rather than just approximating it with a dot

or circle. In the process of doing this, staff also added many subpopulations that were previously unmapped. The result is much more precise data for planning and environmental review.

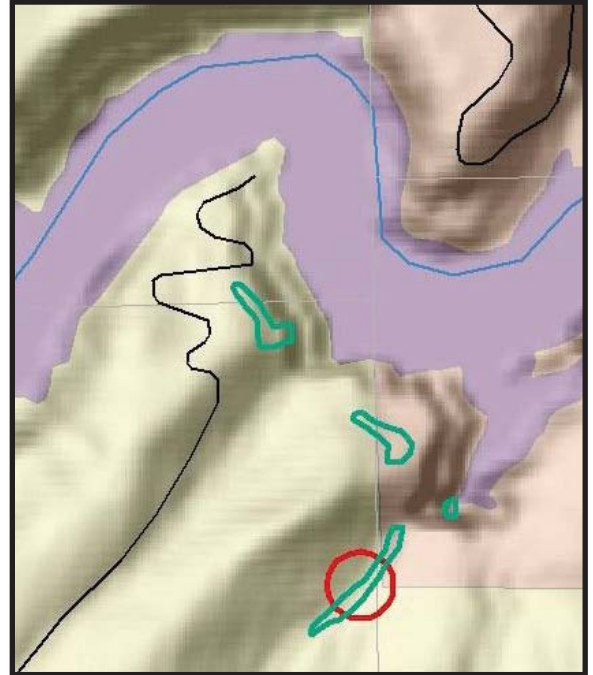
All this detailed work led to some significant status changes:

- 5 plant species were dropped as Species of Concern or Potential Species of Concern due to their observed abundance in the project area; these include *Artemisia pedatifida* (birdfoot sage), *Platyschekubria integrifolia* (basin-daisy), *Xylorhiza glabriuscula* (smooth woodyaster), *Haplopappus multicaulis* (branched goldenweed) and *Eriogonum brevicaulis* var. *canum* (rabbit buckwheat);
- Another 5 other plant species were recommended for removal from BLM's Sensitive Species list, because more precise mapping showed that they do not occur on BLM lands; they are *Amorpha canescens* (lead plant), *Dichanthelium oligosanthes* var. *scribnerianum* (Scribner's panic grass), *Potentilla platensis* (Platte cinquefoil), *Eleocharis rostellata* (beaked spikerush) and *Sullivantia hapemanii* (Wyoming sullivantia).

For further information on this project please see the full

report at: http://mtnhp.org/Reports/BLM_Billings_MC_2006.pdf

In the past several years the MTNHP has completed similar inventory work with the BLM in the Dillon, Butte and Helena areas. These projects have clarified the conservation status of many plant species in the state, and provided valuable information for public lands management. All reports are available on our website.



A plant EO before (circle) and after (irregular polygons) remapping process.

Staff Spotlight - Botanist Scott Mincemoyer



To paraphrase Rodney Dangerfield's famous line, plants don't get no respect -- at least, compared with other NHP specialties like wildlife, wetlands and websites. Nonetheless,

the low profile of the Heritage Program Botanist position belies its importance. **Because no other Montana state agency has a staff botanist, NHP Botanist Scott Mincemoyer often serves as the de-facto "state botanist," providing information and expertise to other state agencies, as well as federal agencies, local governments and the private sector.** Although he fields a broad range of assistance requests, his main focus is on plant Species of Concern -- i.e., those considered to be "at-risk" in Montana.

Since joining the NHP in 2004, Scott has substantially improved the quality

of our plant data and the efficiency of data processing. Among his major accomplishments are adding 650 new plant occurrence records to our database (a 20%+ increase) and improving the mapping accuracy for over 1500 Species of Concern records. Scott has also worked with other MT botanists to improve status-assessment for plants, so that Species of Concern ranks better reflect whether a rare species is simply rare or actually at risk of being lost from our flora. One of his major "quiet successes" was to complete quality ranking for all of our 3000+ plant occurrences (previously only about 10% had quality ranks.) This was something heritage botanists in other states had said simply couldn't be done without major new resources.

Scott has also collected important new field data, focusing on globally rare species such as Spalding's catchfly and Ute ladies-tresses -- both listed as Federally Threatened. Currently, he is working on developing predictive habitat models for rare plants that will improve the efficiency of environmental reviews and field surveys for both public

and private sector biologists.

Scott is considered among the top field botanists in the state and has a diverse background in botany and plant ecology. After graduating from UM in Forest Resource Management, he worked for nearly 10 years at the Fire Sciences Lab in Missoula, focusing on the effects of fire on invasive weeds, ecology and restoration of whitebark pine in the Northern Rockies, vegetation and fuels mapping in large areas of New Mexico and Utah, and the national LANDFIRE mapping project.

Scott's interests and expertise span many vascular plant families and genera, and he has a special interest in Montana willows. As a skilled ecologist, he is also an important member of the NHP Ecology team. On his personal time, Scott is an avid backcountry hiker. In addition to his many explorations in Montana, he spent several months hiking the entire Appalachian Trail in 2003. Scott has been a great addition to our top-notch team at the NHP and we feel truly fortunate -- as do our partners -- to have the benefit of his expertise!

Ecology News

Wetland and Riparian Mapping Update



One of several study sites along the Bitterroot River

In Montana's mostly arid landscape, wetlands and riparian areas are especially important wildlife habitats. Knowing the locations and characteristics of wetlands is critical to effective management. However, the National Wetland Inventory (NWI) mapping project was never completed in Montana, as it was in most other states. To address this information gap, MTNHP formed the Wetland and Riparian Mapping Center in 2006. Our goal is to expand high-quality wetland and riparian mapping throughout Montana with support from partners.

Much good work is already underway. To date, we've completed wetland/riparian mapping in the Bitterroot watershed as part of a wetland change study in partnership with the Montana Department of Environmental Quality. We're now extending this work to the Flathead River

watershed, with the Gallatin River Valley on tap for next year. Also beginning in 2007 we will be mapping the Upper Clark Fork watershed with funding from the Natural Resource Damage Program. Southwest Montana has been identified by partners as the next priority area for wetland mapping, and we hope to begin wetland mapping work there in 2008. Big thanks to all our partners for helping to move this work forward!

All our wetland and riparian mapping is completed to USFWS national standards and the data quality-checked by their national wetland mapping experts. We use the USFWS NWI classification system for wetlands and the USFWS System for Mapping Riparian Areas in the Western U.S. Completed maps and associated data will be available through the NRIS website and NHP web portal tools.

Understanding "Isolated Wetlands"

Many of Montana's wetlands lie in small depressions, unconnected to navigable rivers or their tributaries. These wetlands are often referred to as "geographically isolated wetlands." Though typically small in acreage, these types of wetlands are remarkably productive as wildlife habitat. For example, prairie potholes are considered to be the most important breeding habitat for waterfowl in North America, supporting an estimated 50% to 80% of the entire population of our main waterfowl species (Batt et al. 1989).

Geographically isolated wetlands are also an important source of water and food for many other animals inhabiting the surrounding uplands - including a number of species thought to have declined and/or are considered at risk. Management of these valuable resources relies on good information, including their distribution, characteristics of different types, and how they function.

Starting this year, we will be working with the Montana Department of Environmental Quality to develop better information on geographically isolated wetlands. This will involve data collection, analysis of vegetation types and functions, and mapping. We hope to assess the scope, condition, and status of isolated wetlands, including ephemeral and intermittent streams, and to summarize their acreage, types, functions and values. With this information, landowners and resource managers will be better able to identify wetlands that could benefit most from management. Our surveys will also highlight "reference" sites that can serve as models for management or restoration of various wetland types.

Reference cited:

Batt, B. D. J., Anderson, M. G., Anderson, C. D. and Caswell, F. D.: 1989, 'The Use of Prairie Potholes by North American Ducks', in A. van der Valk (ed.), Northern Prairie Wetlands, Iowa State University Press, Ames, IA, pp. 204-227.

Recent publications

- Freshwater Conservation Measures for the Northern Great Plains Steppe Ecoregion of Montana; March 2007
- Surveys of Significant Plant Resources in southeast and south-central Montana on the Billings and Miles City Field Offices of the Bureau of Land Management; December 2006
- Crosswalking National Wetland Inventory attributes to hydrogeomorphic functions and vegetation communities: a pilot study in the Gallatin Valley, Montana; December 2006
- Yellowstone River Wetland/Riparian Change Detection Pilot Study; July 2006
- Aquatic Surveys and Assessment of the Slim Buttes Region of Harding and Butte Co., SD; May 2006
- Watershed Assessment of the Middle Powder Subbasin, Montana; May 2006
- Grassland Bird Surveys in North Valley County, Montana: Progress Report; May 2006
- Land Mollusk Surveys on USFS Northern Region Lands; May 2006

Prairie Bird Info

Need a **quick reference for managing grassland birds**? Zoologist Susan Lenard created a concise 4-page chart summarizing the ecology and management needs for 18 Species of Concern that inhabit Montana's prairie grasslands. See "What's New" on our web homepage at <http://mtnhp.org>.

Other News

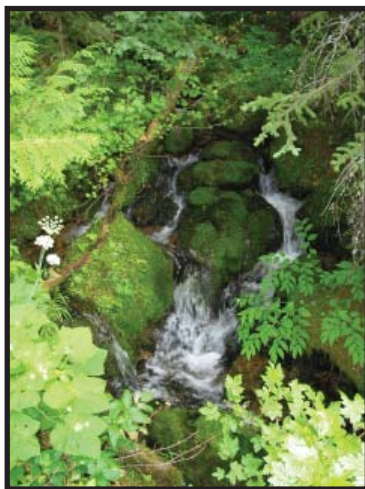
Aquatic Invertebrate Discoveries

There is a special area along the Montana/Idaho border that has been referred to by zoologists as the Northern Rocky Mountain Refugium (Gustafson 2001). It encompasses a large, diverse landscape that extends from Lookout Pass in the north to south of Lost Trail Pass. In simplest terms, it is the mountainous, forested area that was neither covered by northern ice sheets during the glacial periods, nor paved with lava from eruptions to the south and west. Higher elevations within the area also allowed land animals to survive the fluctuating water levels of Glacial Lake Missoula.

This region supports several endemic genera of invertebrates, with additional species that are endemic or widely separated (disjunct) from the Pacific mountain ranges of Oregon and Washington. The eastern slope of this area has been called the Missourian Refugium by fish zoogeographers, and is believed to have been a colonization point for the west slope cutthroat.

NHP surveys in this area last summer documented several new locations for

previously unreported or rarely collected species in Montana, including two mayflies, *Candatella edmundsi* (at 8 sites), *Caurinella idahoensis* (at 3 sites); two stoneflies, *Soliperla salish* (3 sites), *Soyedina potteri* (9 sites); and three caddisflies, *Sericostriata surdickae* (5 sites), *Eocosmoecus schmidi* (3 sites), and *Rossiana montana* (3 sites). All were found in small, high-gradient forest streams near headwater sources. Many of these species are considered globally rare or imperiled, so reliable documentation of their distribution and status (as with the mollusks, page 1) is very important for effective assessment and management.



Typical high-gradient stream habitat where the rare invertebrates were discovered. This first-order stream was an unnamed tributary to Big Creek west of Superior, MT

Funding for this work was provided by the US Forest Service, Region 1. Much of the Northern Rocky Mountain Refugium lies in the Lolo National Forest, with portions also in the Bitterroot NF and Beaverhead NF.

Reference cited:

Gustafson, D.R. 2001. Westslope Cutthroat Hypothesis. Presentation to the American Fisheries Society Meeting, Bozeman, MT.

2007 Field Projects

Ecological Studies

- Sagebrush Succession – Location: southeastern Montana. Funding Partner: BLM
- GAP Ecology Mapping (support role) – Location: eastern and southern Montana. Funding Partner: USGS
- Wetland and Riparian Mapping in the Upper Clark Fork Watershed – Funding Partner: Dept. of Justice, Natural Resource Damage Program
- Wetland Mapping and Historical Change Analysis – Location: Flathead River Valley; Funding Partner: DEQ
- Isolated Wetlands: Distribution, Status, and Functions – Location: statewide, emphasizing the Hi-Line. Funding partner: DEQ/EPA
- Rapid Assessment of Wetlands Using GIS – Location: Statewide. Funding partner: DEQ/EPA
- Watershed and Wetland Assessment – Location: Beartooth Front to Bighorn Canyon. Funding Partner: BLM

Botanical Studies

- Predictive Modeling of Rare Plant Species – Location: southeast and southwest Montana. Funding Partner: BLM
- Surveys for Rare Plant Surveys and Significant Vegetation Types on Missoula BLM lands. Funding Partner: BLM
- Population Monitoring of Water Howellia and Spalding's Catchfly – Location: Seeley-Swan Valley and Wildhorse Island. Funding: USFWS

Zoological Studies

- Grassland Bird Assessments – Location: northeast Montana. Partner – BLM Malta Field Office
- Bat and Terrestrial Mollusk Inventories – Location: National Forest lands. Funding Partner: USFS
- Amphibian and Aquatic Reptile Inventory – Location: Statewide; Funding Partners: MT-FWP, USFS, USGS, DEQ
- Goshawk Status Assessment – Location: Kootenai National Forest. Funding Partner: USFS
- Surveys of the Western Pearlshell Mussel – Location: Beaverhead, Big Hole and Kootenai Regions. Funding Partner: MT-FWP
- Aquatic Survey of Springs & Seeps in Bighorn Canyon. Funding Partner: Western National Parks Association/ National Park Service
- Pearl Dace Surveys – Location: Big Muddy Watershed. Funding Partners: American Fisheries Society, TNC

NHP Botanist Finds New Howellia Site in California (without leaving Montana)

While reviewing plant collection records at the Montana State University Herbarium, Botanist Scott Mincemoyer found a specimen of water howellia collected in 1893 from California – 35 years before the first previously-known collection from that state and in a different area than the single known location. Water Howellia (*Howellia aquatilis*) is listed as Federally Threatened, and known from five states.

Scott forwarded this new information to his colleague at the California Natural Diversity Database, who will conduct surveys to find out if water Howellia still grows in the area. With more healthy populations known, and appropriate monitoring and management in place, this plant may be a good candidate for delisting in future years.

UM Transition

On July 1, 2006 the State Library's contract for operation of the Montana Natural Heritage Program was officially transferred from The Nature Conservancy to the University of Montana. We are now a "sponsored program" in the office of the Vice President for Research & Development, headed up by Dr. Dan Dwyer. The University's strong commitment to science and research is a great match with NHP's lead role in providing scientific information and expertise on Montana's species and habitats.

Thanks to more than a year of planning, as well as great support from University officials, the State Library, the Conservancy and all our partners, we were able to minimize most impacts on MTNHP staff and to transfer all project and funding agreements from TNC to the University. The biggest challenge was adjusting to new financial systems, but even that process is now largely complete. Most importantly, our services to partners and information users continued without skipping a beat. Thanks to everyone who helped make this major transition a success!



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Ecologist "Emeritus"

Last November, veteran NHP Ecologist Steve Cooper decided to hang up his spurs - at least officially - and announced his retirement. However, his enthusiasm for understanding and documenting Montana's ecological heritage remains undiminished, and he has remained actively involved as "ecologist emeritus," volunteering in areas where he has a special interest - such as organizing our vast archive of vegetation photos. Over the summer, Coop will be re-enlisting as a contractor for his favorite part of the work - field surveys. We salute his tremendous contributions to MTNHP over the years and his amazing knowledge of Montana's ecology.

Data Tally

Our data wranglers have been working very hard over the past year. Here's what they've accomplished:

Added Records ...

Point Observations: 301,437
Element Occurrences: 916

Updated Records ...

Point Observations: 39,308
Element Occurrences: 15,852

Total Records ...

Point Observations: 524,901
Element Occurrences: 15,938